

REMARKS

The Applicant thanks the Examiner for the thorough consideration given the present application. Claims 1-31 are pending. The Examiner is respectfully requested to reconsider the rejections in view of the amendments and remarks set forth herein.

Claim Objections

The Examiner has objected to claims 10 and 14 as being in improper form. In response, claims 10 and 14 are amended herein to place them in proper form. Accordingly, reconsideration and withdrawal of the objection are earnestly solicited.

Claim Rejections

Claim 23 is rejected under 35 U.S.C. § 102(e) as being anticipated by Hulme (Hulme, Peter John; Pub. No.: 2002/0, 097, 165 A1); claims 1, 7-8, 15, 20-21 and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hulme (Hulme, Peter John; Pub. No. 2002/0,097,165 A1) in view of Jacobson (Jacobson, James E. Jr., Pub. No.:2001/0,043,245 a1); claims 2-6, 11-13, 17-19, 22, 25-26 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hulme in view of Jacobson as applied to claims 1 and 15 above, and further in view of Lee (lee et al., U.S. Patent No. 5,247,380); and claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hulme in view of Jacobson and Lee as applied to claims 1 and above, and further in view of Smith (Smith et al., U.S. Patent No: 6,192,282 B1).

In contrast to the presently claimed invention, Hulme merely discloses what is normally referred to as a universal remote control system, a system which replaces the increasing numbers of remotes found in homes with a single, universal remote for all the apparatus. The system learns control signals from the remotes to be replaced, and associates the learned control signals with designated signals from the universal remote. The universal remote can trigger transmission of the learned control signals to operatively control the apparatus' previously controlled by the replaced remotes.

Claims 1-24 of the present invention relates to a system and a method for discovering a network topology in order to build routing tables. Here, each device in the network is instructed, by a controller, to discover devices within its range; i.e., to collect identifiers of other devices which can receive and acknowledge signals from the device. The list of collected identifiers is reported back to the controller which builds a routing table based on lists from all devices.

For this reason alone, in the opinion of the Applicant, Hulme does not constitute relevant prior art for the present invention.

Claim Rejections - 35 USC § 102

Claim 23 has been rejected under 35 USC § 102(e) as being fully anticipated by Hulme.

Hulme US Pub. No. 2002/0,097,165 results from a PCT application published 8 October 1998 under WO 98/44647. WO 98/44647 constitutes statutory prior art under 35

USC § 102(b) and would presumably lead to a similar rejection. The US and the PCT publication are identical with regard to the relevant disclosures, and in the following references will be made to the US publication.

Hulme teaches a first remote control device (first remote or RC1) which sends first control signals (CS) comprising control codes which, if the first CS equals a first reference control signal (RCS) of a first apparatus, are used to operatively control the first apparatus. The first remote also sends a third CS which, if it equals a second RCS of the first apparatus, triggers the sending of the second RCS to a second apparatus to operatively control the second apparatus.

Hence, the first remote may be said to generate and transmit a first signal to a first device, the first signal comprising something which identifies the first device as the intended destination, and instructions for the first device to generate and transmit signals to another device.

The first signal sent by the first remote in Hulme is not a signal for instructing the first device to discover other devices within its range.

When compared to claim 23 of the present application, Hulme fails to disclose that the controller holds a device table of identifiers of devices controlled by the controller and that the first signal comprises a list of device identifiers from the device table.

The Examiner states that the predetermined list of paragraph [0065] corresponds to the device table, and that the 'control codes' of paragraph [0011], lines 1-11 corresponds to 'identifiers'. The predetermined list of apparatus of paragraph [0065] is held in the memory of

the STB 10 which corresponds to a device according to claim 23. Thus, the first remote (RC1) does not hold such list. In the opinion of the Applicant 'control codes' of Hulme are not equivalent to 'identifiers' according to claim 23. An identifier is used to uniquely identify a device within the network, and is used to designate the destination and source of a signal. The term 'control code' is not mentioned in [0011] of Hulme, but from [0059] it is clear that a control code is used to identify a function, and not an apparatus. If the user bought two identical TVs, the system of Hulme would not be able to distinguish between them, sending a 'turn off TV' control code would turn off both TVs.

Further, when compared to claim 23 of the present application, Hulme also fails to disclose that the first signal comprises instructions to the first device to generate and transmit signals to the devices from said list for determining which devices from said list can be reached from the first device.

The Examiner again refers to [0011] and [0065] of Hulme for this feature. Sending a signal towards a device does not confirm whether the device can be reached or not. In order to determine which devices can be reached, the transmitting part must receive some kind of acknowledgement that the signal was received. The apparatus to which first remote (RC1) instructs the first apparatus (STB 10) to transmit signals to are VCR 20, TV 30 and HiFi 40. From Figure 1, it is seen that STB 10 has both a receiver block RX and a transmitter block TX. However, VCR 20, TV 30 and HiFi 40 only has a receiver block RX and no transmitter block TX, hence, these can not acknowledge reception of signals from STB 10. Therefore,

first remote would obviously not instruct STB 10 to determine whether these can be reached from STB 10, as this is not possible in the system disclosed by Hulme.

Since Hulme fails to disclose a number of characterising features of claim 23, the Applicant respectfully submits that claim 23 is not anticipated by Hulme and that claim 23 is allowable under 35 U.S.C. 102(e) and (b).

Claim Rejections - 35 USC § 103

Claims 1, 7-8, 5, 20-21 and 24 have been rejected under 35 USC § 103(a) as being unpatentable over Hulme in view of Jacobsen (US Pub. No. 2001/0,043,145 a1).

The Examiner holds that Hulme teaches all elements of the rejected claims except a memory for storing data representing a device identifier and other data. The applicant disagrees with the assessments of the Examiner for the following reasons:

Independent claims 1, 15 and 24 specify a system, a method and a device related to performing a discovery within the network. In the present application, the term "discover" means "a process for designating other devices which a device can send signals to and receive signals from", as is clearly defined in the specification (e.g. page 11, lines 17-23 or page 38, lines 18-33). Claims 1 and 24 specify means comprised by a processing unit of a first device, which means allows the first device to perform a discovery. Claim 15 specifies method steps, some of which is to be performed by the processing unit of the first device when performing a discovery.

The process performed by the processing unit of a first device is described in detail in relation to Figure 8 and is briefly described in the following. The first device receives a list of device identifiers in order to determine which of the corresponding devices can be reached from the first device. The list and the command to initiate the procedure is comprised in the signal of the first type from the controller. In response hereto, the first device sends a signal of the second type to each device from the list using the device identifiers, i.e. if the list contains 12 device identifiers, it transmits 12 second type signals each having a different destination identifier. In order for the discovery procedure to work, any device should be able to both discover and 'be discovered', and therefore the claims also specify how the first device reacts upon receiving a signal of the second type. When receiving a signal of the second type (with its identifier as destination identifier) from another device, the first device responds with an acknowledgement signal, a signal of the third type. When performing discovery, the first device in the previous example may receive 0-12 signals of the third type. The sender of a third type signal is important and should be stored in the first device.

In the currently amended claims, the designation of the first, second, and third type signals has been emphasized to clearly point out that these are different types of signals (such as having different frame types or different commands) and not simply consecutive equivalent signals.

From the above, should be clear that the first apparatus disclosed by Hulme (embodied by STB 10) can not perform the functions or process steps specified in claims 1, 15 and 24, since Hulme does not teach at least the following elements:

- A. more than one apparatus comprising both an RF receiver and an RF transmitter;
- B. dedicated identifiers for each apparatus in the network;
- C. inclusion of a list of identifiers of apparatus to be discovered in signals from a remote to the first apparatus;
- D. processing means of the first or other apparatus for, when receiving a signal of the first type, generating second type signals to apparatus whose identifier is included in the list;
- E. processing means of the first or other apparatus for, when receiving a signal of the second type, generating a third type acknowledgement signal.

Claim 1 and 15 also specify elements related to the functionality of the controller. The arguments presented in relation to claim 23 in the previous section equally apply to the controller-related specifications of claims 1 and 15 to further separate these from the teachings of Hulme.

From the above, it appears that Hulme does not teach a large number of elements of claims 1, 15 and 24.

Jacobson relates to an apparatus for use in an addressable distributed wireless remote control system. Jacobson does not disclose anything related to the discovery of network topology or building of routing tables, and thereby does not teach at least elements C, D and E from the above list.

For these reasons, the Applicant respectfully submits that the combination of Hulme and Jacobson does not render present claims 1, 15 and 24, or claims dependent thereon, unpatentable under 35 USC § 103(a).

Dependent claims 2-6, 9, 11-13, 16-19, 22 have been rejected under 35 USC § 103(a) as being unpatentable over Hulme in view of Jacobson, Lee (USPN 5,247,380) and Smith (USPN 6,192,282).

Regarding claims 2-6, 9, 11-13, 16-19 and 22, the Examiner relies on the assessment that Hulme and Jacobson teach all limitations of independent claims 1 or 15. As argued above and in view of the current amendments, the Applicant holds that Hulme and Jacobson does not teach the elements A-E listed above.

Lee relates to an infrared data communications network in which groups of computers may communicate by infrared signals. The system utilizes a packet switched protocol which allows any terminal to communicate with any other terminal and which permits any terminal to function as a store and forward repeater thus making the system more reliable and less susceptible to beam blockage.

The building of routing tables etc. in Lee is described in relation to Figures 4-8. Lee does not disclose at least elements C, D and E from the previous list of elements A-E.

Smith relates to a building automation system is provided which is modular in design. Lee does not disclose details related to the discovery of network topology or building of routing tables. Hence, Smith does not disclose at least elements C, D and E from the previous list of elements A-E.

For the foregoing reasons, the Applicant respectfully submits that the combination of Hulme, Jacobson, Lee and Smith does not teach all limitations of independent claims 1 and 15, therefore does not render dependent claims 2-6, 9, 11-13, 16-19 and 22 unpatentable under 35 USC § 103(a).

Claims 25-31 of the present application relates to routing of signals in a network using a routing table and a most-used-entry-point list.

Independent claim 25 has been rejected under 35 USC § 103(a) as being unpatentable over Hulme in view of Jacobson and Lee.

Neither of Hulme or Jacobson discloses systems which can route signals through a network (In Hulme, a third control signal from RC1 to the first apparatus triggers transmission of a second reference control signal from the first apparatus to a second apparatus. However, the received and transmitted signals are clearly different signals and it does therefore not compare to routing). Also, the Examiner relies on the interpretation that 'control codes' of Hulme correspond to 'identifiers' in claim 25. As pointed out previously in relation to claim 23, this is not the case.

On page 14, lines 8-13, the Examiner refers to Lee column 9, lines 59-64 as teaching a routing table as claimed and to column 5, lines 11-22 and column 9, lines 54-67 as teaching a most-used-entry-point list.

In claim 25, the routing table and most-used-entry-point list are specified as:

...a routing table indicating for each of the plurality of devices, other devices which each device can successfully transmit signals to and receive signals from, and

...a most used entry point list being an ordered list indicating the device identifiers of the number, N, of devices that have the highest transmission success counter corresponding to the number of successful transmission from the controller to a device minus the number of failed transmissions from the controller to the device,...

Lee column 5, lines 11-22 reads:

In the illustrated embodiment, the control logic and FIFO functions are performed by a programmed microcomputer 130 consisting of a microprocessor (e.g., on Intel 8031), Random Access Memory (not shown), memory for a stored program (typically Read Only Memory, not shown) and conventional input/output interface circuits. Thus the term control logic refers to all the functions necessary for forming and dismantling data packets, performing forward error control and encoding, decoding, checking and correcting received bit errors and control of the overall interaction between the network interface device and the network (i.e. implementing the packet protocol).

The Applicant respectfully submits that this section has no relation at all to the most-used-entry-point list specified in claim 25.

Column 9, lines 59-67 relates to a network routing table and the updating of this according to the flow diagram of Figure 4B. Still the Examiner refer to this section as teaching both a routing table (lines 59-64) and a most-used-entry-point list (lines 64-67). If

the Examiner is to maintain his rejection based on these observations, the Applicant kindly requests that a consistent account of the teachings of Lee in this relation be presented.

More importantly, even if both a routing table and a most-used-entry-point list were present, Lee fails to disclose at least steps C, D and G of claim 25.

Step C reads:

C. if no acknowledgement signal is received by the controller, then choosing the first device from the most used entry point list as a first repeating device,

Regarding step C, the Examiner refers to Figure 4A. Figure 4A is a flow diagram illustrating the methodology and structural flow for the initialization of a device immediately after power on, and does therefore not teach how to determine a route in the network.

Step D reads

D. determining a route to the specified device in the routing table, the route using one or more repeating devices, the first of which is the first repeating device,

The Examiner refers to Figure 2A, but Figure 2A does not teach using a routing table to determine a route to a specified device.

Step G reads:

G. as long as no routed acknowledgement signal is received by the controller from the specified device, then repeating steps D, E, and F for N-1 times using the second, third,...Nth device from the most used entry point list as a first repeating device.

Step G specifies that as long as the destination has not been reached, the system tries alternative routes until the destination have acknowledged reception or until there are no more routes.

The Examiner refers to column 6, lines 4-13, part of which reads (our underlining):

If an acknowledgement (ACK) or no acknowledgement (NAK) isn't received within a reasonable time the network interface device waits a random amount of time and retransmits the packet again. This handshake and retransmission scheme provides immunity to temporary path interruptions. Forward error control is optionally employed to statistically minimize the number of retransmissions required in order to further conserve the communication channel resources

Here, Lee explicitly teaches that the same packet containing the same routing information (same intermediate destination address), until NID have acknowledged reception or until a maximum number or retransmissions have been reached. Hence, Lee does not teach that the system can try a number of alternative routes to reach a destination device.

In view of the above, the Applicant respectfully submits that the combination of Hulme, Jacobsen and Lee does not teach all limitations of independent claim 25 or claims dependent thereon.

In view of the amendments presented herewith and the foregoing remarks, it is respectfully urged that the objections and rejections set forth in the April 1, 2004 Official

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Amendment dated July 1, 2004
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Action be withdrawn and that this application be passed to issue and such action is earnestly solicited.

CONCLUSION

Since the remaining patents cited by the Examiner have not been utilized to reject claims, but merely to show the state of the art, no comment need be made with respect thereto.

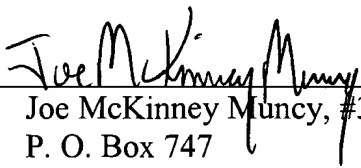
All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, he is invited to telephone the undersigned at (703) 205-8000.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,

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